CLAIMS

What is claimed is:

1. A polymer derivative comprising a polyalkyleneimine backbone having a number of reactive amino functionalities, each reactive amino functionality having at least one reactive hydrogen atom, wherein from about 20% to about 60% of the number of reactive amino functionalities have a substituent-compound substituted in place of the at least one reactive hydrogen atom, each substituent-compound independently selected from the group consisting of carboxylic acids having from about 14 to about 20 carbon atoms.

2. The polymer derivative according to claim 1, wherein the polyalkyleneimine backbone comprises a polyethyleneimine having a molecular weight of from about 400 to about 2500.

3. The polymer derivative according to claim 1, wherein the polyalkyleneimine backbone comprises a polyethyleneimine having a molecular weight of from about 1000 to about 1800.

4. The polymer derivative according to claim 1, wherein the substituent-compounds selected from the group consisting of carboxylic acids comprise a mixture of two or more C_{14}-C_{20} carboxylic acids.

5. The polymer derivative according to claim 1, wherein each substituent-compound is independently selected from the group consisting of carboxylic acids having from about 16 to about 18 carbon atoms.

6. The polymer derivative according to claim 1, wherein the substituent-compounds selected from the group consisting of carboxylic acids comprise a mixture of two or more C_{16}-C_{18} carboxylic acids.

7. The polymer derivative according to claim 6, wherein the mixture comprises palmitic acid and stearic acid in a ratio of about 50:50.

8. The polymer derivative according to claim 1, wherein from about 25% to about 55% of the number of reactive amino functionalities have a substituent-compound substituted in place of the at least one reactive hydrogen atom.

9. The polymer derivative according to claim 1, wherein from about 35% to about 45% of the number of reactive amino functionalities have a substituent-compound substituted in place of the at least one reactive hydrogen atom.

10. A polymer derivative comprising a polyethyleneimine backbone having a molecular weight of about 1200 and a number of reactive amino functionalities, each reactive amino functionality having at least one reactive hydrogen atom, wherein from about 35% to about 45% of the number of reactive amino functionalities have a substituent-compound substituted in place of the at least one reactive hydrogen atom, each substituent-compound independently selected from the group consisting of carboxylic acids having from about 16 to about 18 carbon atoms.

11. A polymer derivative prepared by a process comprising reacting a polyalkyleneimine having a number of reactive amino functionalities with an amount of substituent-compounds comprising one or more carboxylic acids having from about 14 to about 20 carbon atoms, under conditions sufficient to derivatize from about 20% to about 60% of the reactive amino functionalities with the substituent-compounds.

12. A process for preparing a polymer derivative, the process comprising: (a) providing a polyalkyleneimine having a number of reactive amino functionalities per mole, (b) reacting the polyalkyleneimine with an amount of substituent-compounds comprising one or more carboxylic acids having from about 14 to about 20 carbon atoms, wherein the amount of the substituent-compounds used is sufficient to derivatize from about 20% to about 60% of the number of reactive amino functionalities per mole.

13. The process according to claim 12, wherein the polyalkyleneimine comprises a polyethyleneimine having a molecular weight of from about 400 to about 2500.

14. The process according to claim 12, wherein the polyalkyleneimine comprises a polyethyleneimine having a molecular weight of from about 1000 to about 1800.

15. The process according to claim 12, wherein the substituent-compounds comprise a mixture of two or more C_{14}-C_{20} carboxylic acids.

16. The process according to claim 12, wherein the substituent-compounds comprise one or more carboxylic acids having from about 16 to about 18 carbon atoms.

17. The process according to claim 12, wherein the substituent-compounds comprise a mixture of two or more C_{16}-C_{18} carboxylic acids.

18. The process according to claim 17, wherein the mixture comprises palmitic acid and stearic acid in a ratio of about 50:50.

19. The process according to claim 12, wherein the amount of the substituent-compounds used is sufficient to derivatize from about 25% to about 55% of the number of reactive amino functionalities per mole.

20. The process according to claim 12, wherein the amount of the substituent-compounds used is sufficient to derivatize from about 35% to about 45% of the number of reactive amino functionalities per mole.

21. A process for preparing a polymer derivative, the process comprising: (a) providing a polyethyleneimine having a molecular weight of about 1200 and a number of reactive amino functionalities per mole, (b) reacting the polyethyleneimine with an amount of substituent-compounds comprising two or more carboxylic acids having from about 16 to about 18 carbon atoms, wherein the amount

of the substituent-compounds used is sufficient to derivatize from about 35% to about 45% of the number of reactive amino functionalities per mole.

22. A polymer derivative prepared by the process according to claim 12.

23. A polymer derivative prepared by the process according to claim 21.

24. A fiber lubricant composition comprising a polymer derivative according to claim 1.

25. A fiber lubricant composition comprising a polymer derivative according to claim 10.

26. A fiber lubricant composition comprising a polymer derivative according to claim 11.

27. A fiber lubricant composition comprising a polymer derivative according to claim 22.

28. A fiber lubricant composition comprising a polymer derivative according to claim 23.

29. A method of lubricating a fiber material comprising providing a fiber material and contacting the fiber material with a polymer derivative according to claim 1.

30. A method of lubricating a fiber material comprising providing a fiber material and contacting the fiber material with a polymer derivative prepared by the process according to claim 12.